

REMARKS

I. INTRODUCTION

Receipt of the Office Action of June 6, 2003 is acknowledged. Applicants request reconsideration of the application in view of the remarks that follow.

Claims 6, 7, 20-30 and 39-55 will be pending upon entry of the amendments to the claims.

II. THE OFFICE ACTION

Rejection based on Obviousness-type Double Patenting:

The Examiner has rejected claims 6, 7 and 20-30 and 39-55 under Obviousness Type Double Patenting. Applicants respectfully traverse.

Without acquiescing to the position of the Examiner, a terminal disclaimer is being submitted herewith.

Therefore, the rejection based on obviousness-type double patenting is moot.

Rejection based on 35 U.S.C. § 103(a)

The Examiner has maintained the rejection of claims 6, 7 20-42 and 45-55 under 35 U.S.C. § 103(b) as allegedly unpatentable over Ninomiya et al. (U.S. Patent No. 4,210,628) in view of JP 06079176.

The Examiner has also maintained the rejection of claims 6, 7, 20-30 and 39-52 under 35 U.S.C. § 103(b) as allegedly unpatentable over Hamada et al. (U.S. Patent No. 4,500,501) in view of JP 06079176. Applicants traverse the rejections.

The Examiner states in the Office Action that “[w]hile acid treatment creates surface oxy groups which are hydrophilic, the overall character is still hydrophobic due to the low number of these groups.” Applicants disagree with this assessment of the cited references.

The active carbon of JP '176 is prepared by baking the surface of the carbon in non-oxidizing atmosphere at 600-1200°C in order to remove surplus hydrophilic oxygen-

containing functional groups and oxidized again at a high temperature of 250-400 °C with concentrated sulfuric acid in order to introduce specific hydrophilic oxygen-containing functional groups. Only these specific hydrophilic oxygen-containing functional groups are considered to be effective for reduction and removal of NO by ammonia. This is evidenced by the teaching of I. Mochida et al, The Chemical Society of Japan, 1992, (3), p275-281, a copy of which was attached as Exhibit 9 in the response filed January 27, 2003, a partial translation of which is attached hereto as Exhibit 1.

First, the result of the element analysis shows that the content of oxygen is increased from about 5% (in original active carbon fiber OG-5A) to about 10-36% and the content of sulfur is increased from trace amount (in original active carbon fiber OG-5A) to about 0.3 to 4% by sulfuric acid activation treatment. See Table 1 of Mochida.

Second, the result of the TPD analysis shows that the amount of CO₂, which is derived from hydrophilic oxygen-containing functional groups and is generated at 450-800°C, is increased two fold by sulfuric acid activation treatment. See Table 3 and Figure 6 of the Mochida article.

Moreover, Figures 3 and 4 of Mochida show the effect of relative humidity on removal performance of NO on active carbon. The removal performance of each of the activated carbon fibers treated with sulfuric acid shows a sharp decline at 60% and over of relative humidity, as is shown in figures 3 and 4. This is because the activated carbon fiber treated with sulfuric acid is high in hydrophilicity.

In order to increase the ammonia binding ability, the activated carbon is subjected to sulfuric acid activation treatment which introduces specific hydrophilic oxygen-containing functional groups. This, therefore, imparts a hydrophilic character to the carbon. Thus, no hydrophobic activated carbon fiber is taught or suggested by JP '176.

There is no motivation to combine Ninomiya or Hamada with an active carbon fiber prepared only by baking active carbon fiber which is not subjected to sulfuric acid activation treatment.

The combination of JP '176 with Ninomiya or Hamada fails to remedy the problem in the art with the use of ammonia (as stated in the previously filed response filed January 27, 2003) and also does not constitute a proper combination of references since JP '176 fails to teach hydrophobic carbon and actually teaches hydrophilic carbon.

Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

III. CONCLUSION

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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By Stephen B. Maebius

FOLEY & LARDNER
Customer Number: 22428
Telephone: (202) 672-5569
Facsimile: (202) 672-5399

Stephen B. Maebius
Attorney for Applicant
Registration No. 35,264